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| **SUBJECT/TITLE:** | **ALTERNATE EQUIPMENT MANAGEMENT (AEM) PROGRAM** |
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| **PURPOSE:** | In accordance with CMS/TJC regulations, UIHC has established an Alternate Equipment Maintenance (AEM) program for selected utility systems equipment to use other than manufacturers’ recommendations for inspections / testing / maintenance (ITM). |
| **DEFINITIONS:** | Utility systems are defined by TJC as building systems that provide support to the environment of care, including electrical distribution and emergency power; vertical and horizontal transport; heating, ventilating, and air conditioning (HVAC); refrigeration; plumbing and mechanical systems including piped gases and vacuum systems.  High-risk utility system operating components – As stated within the Utility Management Plan, high-risk utility system operating components (equivalent to the CMS term Critical Components) are any devices or components of building utility systems for which there is a risk of serious injury or death to a patient or staff member if the device or component fails. High-risk equipment includes but is not limited to life support equipment. However it applies more broadly, encompassing other items that are technically not necessary to support life but that would put the patient or staff member at risk of serious injury or death if they fail. All high-risk operating components are so designated on the utility inventories.  Generally Accepted Standards of Practice – Generally Accepted Standards of Practice used by UIHC in its AEM Program take into account the following publications by nationally recognized organizations/expert associations in establishing AEM activities and frequencies.   * American Society for Healthcare Engineering (ASHE) 2009 document: Maintenance Management for Health Care Facilities (hereinafter called the ASHE Book) * ANSI/NETA (InterNational Electrical Testing Association) Standard for Maintenance Testing Specifications for Electrical Power Equipment and Systems * NFPA 70B, Recommended Practice for Electrical Equipment Maintenance * NFPA Standards such as NFPA 17A (standard for wet chemical extinguishing systems); NFPA 99 (standard for health care facilities); NFPA 99C (standard on gas and vacuum systems); NFPA 110 (standard for emergency and standby power systems). * ANSI/ASHRAE/ACCA Standard 180-2008, Standard Practice for Inspection and Maintenance of Commercial Building HVAC Systems; including Addendum a dated 2012 |

**POLICY:**

The AEM program strategies will not reduce the safety of equipment and will be based on accepted standards of practice. This policy describes the approach and methodology to be used in managing the inclusion of utility system components within the AEM program. The concepts and methodology are intended to provide flexibility. Within this program, Alternate Equipment Maintenance refers to the categories of Inspection, Testing & Maintenance (ITM) activities and related frequencies to which it is applied. AEM may be applied to one or two categories for an operating component but not to the remaining categories for that operating component depending upon other codes and standards or upon UIHC’s intention to use manufacturer’s recommendations for the remaining categories.

**PROCEDURE:**

A.Responsibilities

The responsibility of the AEM program fro Engineerig Services (ES) utility systems is assigned to the department management team.

B. Exclusions

The following equipment is excluded from the AEM Program. UIHC’s activities and frequencies for inspecting, testing, and maintaining (ITM) the following items will be in accordance with regulatory requirements where applicable and manufacturers’ recommendations apply. Equipment subject to federal or state law or Medicare Conditions of Participation in which inspecting, testing, and maintaining be in accordance with the manufacturers’ recommendations, or otherwise establishes more stringent maintenance requirements (this includes any ITM mandated by the NFPA 101 Life Safety Code® edition that is enforced by CMS/TJC.) The mandate may be directly within NFPA 101 or by mandatory reference invoking requirements within another dated NFPA standard.

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2. New operating components with insufficient maintenance history to support the use of alternate maintenance strategies. New equipment would be equipment that has new design or technology with which UIHC is unfamiliar and/or for which there are no similar types of devices on which to base an AEM strategy. Note: Maintenance history includes any of the following documented evidence: (A) Records provided by UIHC’s contractors; (B) Information made public by nationally recognized sources; (C) Records of UIHC’s experience over time.

C. AEM Maintenance Strategies

The types of available maintenance strategies are identified within the ASHE Book and listed below. They are not necessarily specifically identified by these terms within the PM work orders or the contract documents for outside service contractors, however they are taken into account by UIHC personnel in determining AEM activities and frequencies.

1. Preventive Maintenance (PM); either interval-based or metered.

2. Predictive Maintenance (PdM), also called condition-based maintenance.

3. Reactive Maintenance (corrective, breakdown, or run-to-failure maintenance) when equipment failure presents little or no risk to health and safety.

4. Reliability-Centered Maintenance (RCM) that considers factors unique to individual pieces of equipment such as equipment function, consequences of failure, and the specific operational environment of the equipment:

D. AEM Maintenance Concepts

The following allowable AEM maintenance concepts are in accordance with the concepts within the 2009 ASHE Healthcare Maintenance Management book, a CMS/TJC approved generally accepted industry standard of practice.

1. Middle of the road approach: One major maintenance procedure (inspection, lubrication, calibration or testing for wear) per item, per determined frequency; plus minor procedures as required for (1) reasonable performance; (2) required inspections and testing to meet compliance rules
   * Environmental unit (EU) concept: An environmental unit is a space of manageable size with a single PM ID#. The PM ID# description clearly defines which items in the sample list below are included within it. Manageable size is defined in terms of either a unit's function, (such as an ICU, general patient care area, non-patient care area, mechanical area, electrical area or the time required (such as half floor) to effectively manage the work. The hospital can be divided into environmental units; all environmental unit equipment within the environmental unit is considered part of the unit.
2. Functional unit concept: The functional unit concept considers one operating subsystem as one unit. This concept applies to a piece of equipment, or easily identifiable system, composed of several parts of modules. If the parts or modules always occur together and require each other to be functional, the entire system can be considered as one piece of equipment on the inventory. A chiller, for example, is a system composed of a compressor, condenser, pumps, and valves that can be treated as one piece of equipment. In this way, only one maintenance protocol is developed so that the entire system is inspected at one time rather than individual parts being inspected separately. Documentation is kept on a system rather than on each individual part.
3. Grouping concept: The grouping concept controls the maintenance inventory of large quantities of essential equipment. (i.e., fire extinguishers.) One work order can cover a large group, and the group includes all essential equipment assigned to the group.

E. AEM Maintenance Compliance Targets

AEM activities and frequencies are intended to be followed.

1. The target for high-risk operating components is 100% on-time compliance.
2. The target for Infection Control operating components is 100% on-time compliance.
3. The target for all other operating components is not less than 90% on-time compliance.

F. AEM ITM Tools

Tools (e.g., hand tools, test equipment, software, etc.) necessary for performing equipment ITM will be available and maintained to ensure that measurements are reliable. Tools used for ITM are not required to be the tools specifically recommended by the manufacturer, but will be capable of providing equivalent results.

G. Removing Unsafe/Unsuitable Equipment from Service

When the Director of Engineering Services or his designee determines that an existing piece of equipment is unsafe or unsuitable for continued service and will remove without placing undue risk to patient safety.

Source: UI Healthcare Engineering Servicew

Date effective : July 1, 2016

Date Reviewed: July 1, 2016